THE JOURNAL

—OF THE—

FRANKLIN INSTITUTE,

DEVOTED TO

SCIENCE AND THE MECHANIC ARTS.

EDITED BY

Dr. H. W. Jayne, Chairman; Mr. Edwin Swift Balch, Ph.D., Dr. Persifor Frazer, Mr. Louis E. Levy, Prof. Coleman Sellers, E.D., Committee on Publications;

with the Assistance of
Dr. Wm. H. Wahl, Secretary of the Institute.

VOL. CLIX.—Nos. 949-954.

(80th YEAR.)

JANUARY-JUNE, 1905

BERLIN COLLEGE LIBRARY

PHILADELPHIA:

Published by the Institute, at the Hall, 15 South Seventh Street.

1905

JOURNAL OF THE FRANKLIN INSTITUTE.

Vol. CLIX.—January-June, 1905.

INDEX.

Accidents on American Railways....401
Adiabatics, determination of exponents of. (Snook)....199
Amperemeter for high potential currents.. (Snook)....191
Anderson, Cyrus N. The U. S. patent laws, historically considered....51

Babbitt, Z. B. The telegraphone....17
Bacterial disposal of sewage. (Hill)....1
Bi-focal lens, a solid invisible. (Borsch)....313
Blast furnace practice. (Uetling)....117
Blast furnace gases, utilization of....460
Book Notices....143, 322, 402, 464
Borsch, J. L. A solid invisible bi-focal lens....313
Bradbury, Robert H. Radium and radio-activity in general....225
Bronzes for steam uses, physical characteristics of. (Kneass)....65

Carnegie Institution work....215
Calcium carbide as an explosive....455
Car wheels, rolled steel. (Vauclain)....81
Chemical evolution....396
Clock actuated by radium....437
Coal, experiments with submerged....50
Combustibles, the value of the flame of. (Mahler-Isherwood)....31
Compound gas engine....422
Correspondence:
Sellers-Bancroft. Correction in Wm. Sellers memorial sketch....464
The proposed combination of the Mass. Institute of Technology and Harvard University....146
"Critical point," the....422

Devereux, Washington. The inspection of electric conduits with especial reference to fire protection....299
Diffraction gratings, replicas of. (Ives)....457
Division of tests established by the Dept. of Agriculture....16

Electric conduits, inspection of, &c. (Devereux)....299
dissipation of fogs....454
furnace construction....100
power transmission in France, long-distance....142
smelting of iron ores....44
furnace inventions....462

FRANKLIN INSTITUTE:
Annual report of the Board of Managers, with appendix.....149
Committee on Science and the Arts:
Reports:
The Glazier fire-nozzle; Lovekin's expanding and flanging machinery and tools, 78; Ruud's instantaneous automatic water heater, 79; Kurtz's electrically-welded cap-screws and bolts, 159; Parkinson's knitting machine, Rosenbaum's automatic hydraulic letter-copying press, 239; Frazer's method of quantitative colorimetry, 323; Burglar Immunity Co.'s electric protective devices, Pupin's improvements in telephoning over long distances, 324; Eastman & Co.'s improved fire nozzle, 470; Miley & Son's color photographs, 470; Raby's metallic railway tie, 472; Alexander's phonosphere, 472; Colt's Arms Co.'s improved pistol.....472
Proceedings of Stated Meetings:
December, 1904, to May, 1905.....76, 148, 238, 323, 478
Sections:
Proceedings of.....160, 238, 403, 473
Fogs, electric dissipation of.....454
Fritz medal awarded to Lord Kelvin.....459

Gardner, Thomas M. Determination of exponents of adiabatics.....199
Gas engine, compound.....422
turbines.....100
wells, recorded high pressure.....99
Goldsmith, E. Salt making in the far West.....45
Gold from sea water.....455
Graham, John Howard. Determination of sulphur in iron ore.....441

Haupt, Lewis M. A menace to the New York harbor entrance.....101
Hardwood supplies in the United States.....440
High-pressure gas wells.....99
Hill, John L. The Torresdale conduit.....241
Hill, G. Everett. The bacterial disposal of sewage.....1

Iron ores, electric smelting of.....44
Ives, Fred. E. Replicas of diffraction gratings.....457

Jupiter, sixth satellite of.....437

Kneass, Strickland. Physical characteristics of certain bronzes for steam uses.....65
Kunzite.....215

Liquid fuels, calorific power of.....456

Magnesite as a lining for fire-brick.....215
Magnetic storms and sun spots.....216
Mahler, P. The value of the flame of combustibles. Translated by B. F. Isherwood.....31

Matthews, J. Merritt. Chemistry of wool.....397
Sulphur dyes.....143
Meeker, G. H. On the distribution of velocity among the members of a group of gas molecules.....383
Melting points.....460
Mississippi, controlling the floods of. (Van Meerten).....423
Moldenke, Richard. Testing cast iron.....405

New York harbor entrance, a menace to. (Haupt).....101

Obituary: WILLIAM SELLERS.....365
Osmium lamp, the.....461

Patent laws of the U. S., historically considered. (Anderson).....51
Photo-printing machine. (Rondinella).....76
Preservatives, effect of, on health and digestion. (Wiley).....23
Pure nickel for coinage.....440

Radium.....382
and radio-activity in general. (Bradbury).....225
clock actuated by.....437
Railway ties, steel.....50
Recovery of tin from scraps.....76
Rhine-Danube ship canal.....44
Resistance of railway trains.....455
Rolled steel car wheels. (Vauclain).....81
Rondinella, L. F. Photo-printing machine.....76
Rubber, rapid advances in.....22

Sadtler, Samuel S. A simple method of calculating water analyses and amounts of substances to be added for preventing scale and corrosion in boilers.....217
St. Louis fair, close of.....116
Salt making in the far West. (Goldsmith).....45
SELLERS, WILLIAM. Obituary notice of.....365
Sewage, the bacterial disposal of. (Hill).....1
Ship canal, Rhine-Danube.....44
Snook, H. Clyde. An amperemeter for high-potential currents.....191
Steam turbines: Discussion. H. W. Spangler, Louis C. Lœwenstein, J. A. Lafore, Richard H. Rice, J. H. Macalpine, Francis Head, Oscar Schmidt.....325
Steam, determining moisture of.....459
production, cheap.....312
turbines for Baltimore.....99
Steel cars and safe travel.....439
railway ties.....50
Steels, special.....215
Structure of steel.....463
Submerged coal experiments.....50
Subway engineering in 1904.....382
Sulphur in iron ores, determination of. (Graham).....441

Sulphur dyes. (Matthews).....143
Sun-spots, magnetic storms and.....216

Telegraphone, the. (Babbitt).....17
Tantalum lamp, the.....461
Telephone line engineering. (Woodbury).....161
Testing cast iron. (Moldenke).....405
Test division, of, established by the Dept. of Agriculture.....16
of brown wire-wood grass.....22
Tin in Bolivia.....298
from scrap, recovery of.....76
Tin in Dakota.....463
Torresdale conduit. (Hill).....241

Uehling, Edward A. Fundamental principles involved in blast-furnace practice.....117
Unexpected, beware of the.....462

Van Meerten, H. Controling the floods of the Mississippi.....423
Vauclain, S. M. Rolled steel car wheels.....81

Waste coal, utilization of.....142
Water analyses, simple method of calculating, etc. (Sadtler).....217
Wiley, H. W. Effect of preservatives on health and digestion.....23
Wireless telegraph system, testing.....312
telegraphy, the practical side of.....298
determining a ship's bearing by.....438
Woodbury, C. J. H. Telephone line engineering.....161
Wool, chemistry of. (Matthews).....397